

WHAT IS CLAIMED IS:

1. A method for manufacturing a piezoelectric element comprising a coating step of coating a substrate with a coating liquid for forming the 5 piezoelectric element thereby forming a coated film, a drying step of drying said coated film, a preliminary sintering step of preliminarily sintering said coated film thereby forming an oxide film, a final sintering step of finally sintering said oxide 10 film thereby forming a piezoelectric film, and a cooling step of cooling said piezoelectric film:

wherein said steps are executed in the presence of a moisture-containing gas; in said coating step said substrate has a temperature equal to or less 15 than 50°C and the moisture-containing gas has a relative humidity of 60 %RH or less at 25°C; in said drying step, said substrate has a temperature equal to or less than 200°C and said relative humidity is 10 to 70 %RH; in said preliminary sintering step said 20 substrate has a temperature of 200 to 450°C and said relative humidity is 70 to 100 %RH; in said final sintering step said substrate has a temperature of 500 to 800°C and said relative humidity is 70 to 100 %RH.

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2. A method for manufacturing a piezoelectric film according to claim 1, wherein the moisture-

containing gas present in said preliminary sintering step, said final sintering step and said cooling step contains oxygen by 10 vol% or more.

5 3. A method for manufacturing a piezoelectric film according to claim 1, wherein said coating liquid includes a raw material component of the piezoelectric film, containing at least one of Pb, La, Zr and Ti as a constituent element.

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4. A method for manufacturing a piezoelectric film according to claim 1, wherein said coating liquid includes a raw material component of the piezoelectric film obtained by reacting a metal alkoxide or a metal salt and water in a solvent having a boiling point equal to or higher than 100°C or in a solvent containing such solvent.

15 5. A method for manufacturing a piezoelectric film according to claim 1, wherein in the cooling step, the relative humidity is 70 to 100 %RH.

20 6. A piezoelectric element comprising a piezoelectric film provided between a lower electrode and an upper electrode, wherein said piezoelectric film is prepared according to the manufacturing 25 method according to claim 1.

7. A piezoelectric element according to claim 6,
wherein said piezoelectric film is constituted of a
constituent component represented by a general
formula $Pb_{1-x}La_x(Zr_yTi_{1-y})O_3$ (wherein $0 \leq x < 1$, $0 \leq y$
5 ≤ 1).

8. An ink jet recording head comprising a
pressure chamber communicating with an ink discharge
port, a vibration plate provided corresponding to
10 said pressure chamber, and a piezoelectric element
according to claim 7, provided corresponding to said
vibration plate, wherein an ink in said pressure
chamber is discharged from said ink discharge port by
a volume change in said pressure chamber, generated
15 by said piezoelectric element.